

## IN THE CLAIMS

Please amend the claims **as previously amended under Article 34** as follows:

1. (Original) A thermal processing unit comprising:
  - a heating-furnace body whose upper end has an opening,
  - a reaction tube consisting of a single tube contained in the heating-furnace body,
  - a gas-discharging-unit connecting portion formed at an upper portion of the reaction tube, the gas-discharging-unit connecting portion having a narrow diameter,
  - a substrate-to-be-processed supporting member for supporting a substrate to be processed, contained in the heating-furnace body, and
  - a heating unit for heating the substrate to be processed supported by the substrate-to-be-processed supporting member,wherein the heating unit has:
  - a first heating portion arranged around the reaction tube,
  - a second heating portion arranged around the gas-discharging-unit connecting portion,
  - a third heating portion arranged around an upper portion of the reaction tube,
  - a fourth heating portion arranged around a lower portion of the reaction tube,and
  - a fifth heating portion arranged under the substrate-to-be-processed supporting member.
2. (Original) A thermal processing unit according to claim 1, wherein
  - the first heating portion is formed by a plurality of linear heat-generating members, which are arranged in parallel with a longitudinal direction of the reaction tube.
3. (Original) A thermal processing unit according to claim 1, wherein

the first heating portion is formed by a plurality of U-shaped heat-generating members, which are arranged in parallel with a longitudinal direction of the reaction tube.

4. (Currently Amended) A thermal processing unit according to ~~any of claims 1 to 3~~ claim 1, wherein

the second heating portion is formed by a linear heat-generating member, which is arranged in a spiral pattern.

5. (Currently Amended) A thermal processing unit according to ~~any of claims 1 to 4~~ claim 1, wherein

the third heating portion is formed by a linear heat-generating member, which is arranged in a spiral pattern.

6. (Currently Amended) A thermal processing unit according to ~~any of claims 1 to 4~~ claim 1, wherein

the third heating portion is formed by a linear heat-generating member, which is arranged in a switchback pattern.

7. (Currently Amended) A thermal processing unit according to ~~any of claims 1 to 6~~ claim 1, wherein

the fourth heating portion is formed by a linear heat-generating member, which is arranged in a spiral pattern that is seen as a rectangular in a circumferential direction of the reaction tube.

8. (Currently Amended) A thermal processing unit according to ~~any of claims 1 to 6~~ claim 1, wherein

the fourth heating portion is formed by a linear heat-generating member, which is arranged in a switchback pattern.

9. (Currently Amended) A thermal processing unit according to ~~any of claims 1 to 8~~  
claim 1, wherein

the fifth heating portion is formed by a plate-like heat-generating member.

10. (Currently Amended) A thermal processing unit according to ~~any of claims 1 to 8~~  
claim 1, wherein

the fifth heating portion is formed by a heat-generating member arranged along  
a lower surface of the substrate-to-be-processed supporting member.

11. (Currently Amended) A thermal processing unit according to ~~any of claims 2 to 4~~  
~~and 8~~ claim 2, wherein

the linear heat-generating member is formed by sealing a resistance heater into a  
hollow tubular member made of ceramics.

12. (Original) A thermal processing unit according to claim 9, wherein

the plate-like heat-generating member is formed by sealing a resistance heater  
into a hollow plate-like member made of ceramics.

13. (Currently Amended) A thermal processing unit according to ~~claim 11 or 12~~ claim  
11, wherein

the ceramics is quartz.

14. (Currently Amended) A thermal processing unit according to ~~any of claims 1 to 13~~  
claim 1, wherein

the second heating portion is supported in a movable manner in a horizontal  
direction.

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Canceled)

19. (Canceled)

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Canceled)

24. (Canceled)

25. (Canceled)

26. (Canceled)

27. (Previously Presented) A thermal processing unit comprising:

a heating-furnace body whose upper end has an opening,

a reaction tube consisting of a single tube contained in the heating-furnace body,

a gas-discharging-unit connecting portion formed at an upper portion of the reaction tube, the gas-discharging-unit connecting portion having a narrow diameter,

a substrate-to-be-processed supporting member for supporting a substrate to be processed, contained in the heating-furnace body,

a heating unit for heating the substrate to be processed supported by the substrate-to-be-processed supporting member,

a reaction-tube lower lid that seals a lower portion of the reaction tube and holds airtightness in the reaction tube, and

a temperature measuring unit formed by sealing a plurality of temperature measuring members into a hollow tubular member,

wherein the hollow tubular member is arranged in a gap between the heating-furnace body and the reaction tube.

28. (Cancelled)

29. (Original) A thermal processing unit comprising:

a heating-furnace body whose upper end has an opening,

a reaction tube consisting of a single tube contained in the heating-furnace body,

a gas-discharging-unit connecting portion formed at an upper portion of the reaction tube, the gas-discharging-unit connecting portion having a narrow diameter,

a substrate-to-be-processed supporting member for supporting a substrate to be processed, contained in the heating-furnace body,

a heating unit for heating the substrate to be processed supported by the substrate-to-be-processed supporting member,

a reaction-tube lower lid that seals a lower portion of the reaction tube and holds airtightness in the reaction tube,

a second temperature measuring unit formed by sealing a plurality of temperature measuring members into a second hollow tubular member, and

a third temperature measuring unit formed by sealing a plurality of temperature measuring members into a third hollow tubular member,

wherein at least a portion of the second hollow tubular member extends horizontally from an upper portion of the reaction tube, and

at least a portion of the third hollow tubular member is arranged in a gap between the heating-furnace body and the reaction tube.

30. (Canceled)

31. (Original) A thermal processing unit comprising:

a heating-furnace body whose upper end has an opening,

- a reaction tube consisting of a single tube contained in the heating-furnace body,
- a gas-discharging-unit connecting portion formed at an upper portion of the reaction tube, the gas-discharging-unit connecting portion having a narrow diameter,
- a substrate-to-be-processed supporting member for supporting a substrate to be processed, contained in the heating-furnace body,
- a heating unit for heating the substrate to be processed supported by the substrate-to-be-processed supporting member,
- a reaction-tube lower lid that seals a lower portion of the reaction tube and holds airtightness in the reaction tube,
- a second temperature measuring unit formed by sealing a plurality of temperature measuring members into a second hollow tubular member, and
- a third temperature measuring unit formed by sealing a plurality of temperature measuring members into a third hollow tubular member,

wherein the heating unit has:

- a first heating portion arranged around the reaction tube,
- a second heating portion arranged around the gas-discharging-unit connecting portion,
- a third heating portion arranged around an upper portion of the reaction tube,
- a fourth heating portion arranged around a lower portion of the reaction tube, and
- a fifth heating portion arranged under the substrate-to-be-processed supporting member,

- at least a portion of the second hollow tubular member extends horizontally from an upper portion of the reaction tube, and
- at least a portion of the third hollow tubular member is arranged in a gap between the heating-furnace body and the reaction tube.

32. (Cancelled)

33. (Currently Amended) A thermal processing unit according to claim 31 ~~or 32~~, wherein

a temperature controlling unit is provided around the gas-discharging-unit connecting portion.

34. (Original) A thermal processing unit according to claim 33, wherein the temperature controlling unit is a heat-insulating material.

35. (Original) A thermal processing unit according to claim 33, wherein the temperature controlling unit is a resistance heater.

36. (Currently Amended) A thermal processing unit according to claim ~~34 or 35~~, wherein the temperature controlling unit has flexibility.

37. (Currently Amended) A thermal processing unit according to claim ~~34 or 35~~, wherein the temperature controlling unit is shaped in advance.

38. (Currently Amended) A thermal processing unit according to ~~any of claims 31 to 37~~ claim 31, wherein

the gas-discharging unit is a gas-discharging pipe whose end portion has a flange,

a flange is formed at an end portion of the gas-discharging-unit connecting portion, and

the flange at the end portion of the gas-discharging-unit connecting portion and the flange at the end portion of the gas-discharging pipe are hermetically connected to each other by means of a sealing unit.

39. (Original) A thermal processing unit according to claim 38, wherein the temperature controlling unit has a fluid hole provided in the flange.